

Name:

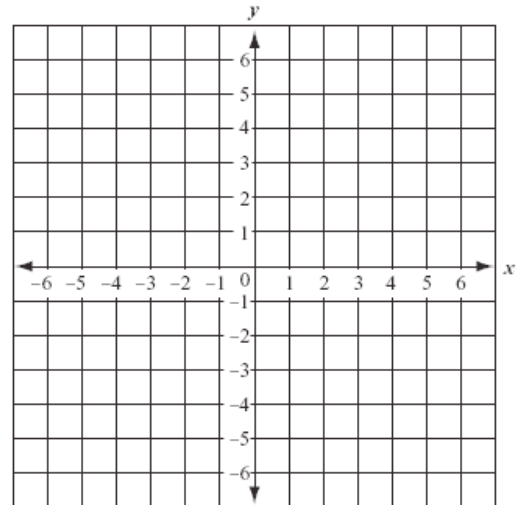
1. Write the point-slope equation of the line containing the point $(2,3)$ and having slope $\frac{-3}{2}$
2. Write an equation of the line containing the points $(5,1)$ & $(5,8)$
3. A line has equation $5x - 2y = -20$. Write a slope-intercept equation that contains the point $(10,1)$ and is perpendicular to the first line.
4. Determine the two coordinates of the x-intercept of the line with equation $y = \frac{1}{3}x - 4$
5. Write the height h of an equilateral triangle as a function of its side length x . Then determine the height of an equilateral triangle with a side length of 8 inches.
6. Identify the domain and range of the function $f(x) = \sqrt{3-x}$
7. Identify the domain and range of the function $p(x) = x^2 - 4x$
8. Identify the domain and range of the function $w(x) = \frac{1}{x^2 + 4}$
9. Identify the domain and range of the function $g(x) = \sqrt{16 - x^2}$
10. Identify the domain and range of the function $k(x) = 2\sin x$
11. Identify the domain and range of the function $T(x) = 2\tan x$

12. Identify the domain and range of the function $f(x) = \frac{1}{\sqrt{4-x^2}}$

13. Given the piecewise function $f(x) = \begin{cases} \frac{1}{2}x + 3 & \text{if } -5 \leq x < 1 \\ -2x + 3 & \text{if } x \geq 1 \end{cases}$,

determine the following:

- A graph the function
- The value of $f(3)$
- If the function is continuous at $x = 1$
- The domain of the function



14. Page 19 # 41

15. Page 19 # 44

16. Determine simplified expression for $f(g(x))$ and the domain of $f(g(x))$ given the functions

$$f(x) = 1 - x^2 \text{ and } g(x) = \sqrt{x-2}$$

17. Determine simplified expression for $g(f(x))$ given the functions $f(x) = x^3 - 8$ and

$$g(x) = (x+8)^{\frac{1}{3}}$$

18. A portion of a graph of a function defined on the interval $[-2, 2]$ is shown. Complete the graph assuming the graph is supposed to be an even function.

19. A portion of a graph of a function defined on the interval $[-2, 2]$ is shown. Complete the graph assuming the graph is supposed to be an odd function.

20. Determine the zero of the function $f(x) = 5 - 8^x$. Give the zero accurate to three decimal places.
21. Suppose the half-life of a certain radioactive substance is 20 days and there are 5 grams present initially. When will there be only 3 grams of the substance remaining?
22. What is the range of the function $f(x) = -2^x + 3$
23. What is the range of the function $f(x) = \ln(x - 2) + 1$
24. Determine to three decimal places of accuracy how much time is required for an investment to double in value if interest is earned at the rate of 6.25% compounded monthly.
25. Determine to three decimal places of accuracy how much time is required for an investment to double in value if interest is earned at the rate of 6.25% compounded continuously.
26. The number of bacteria in a petri dish culture after t hours is given by the function $B(t) = 100e^{0.693t}$
- What was the initial number of bacteria present?
 - How many bacteria are present after 6 hours?
 - Approximately when will the number of bacteria be 350?
27. What is the inverse function of $f(x) = 2^x$?
28. If $g(x) = e^{x-2}$, then determine $g^{-1}(x)$.
29. If $k(x) = \ln(x - 5)$, then determine $k^{-1}(x)$.
30. Determine if the function $f(x) = \sqrt{x + 6}$ is a one-to-one function. Answer with “yes” or “no” and explain why or why not.

31. Determine if the function $g(x) = x^2 - 1$ is a one-to-one function. Answer with “yes” or “no” and explain why or why not.
32. Determine if the function $p(x) = \frac{1}{x-3}$ is a one-to-one function. Answer with “yes” or “no” and explain why or why not.
33. Determine if the function $A(x) = \tan x$ is a one-to-one function. Answer with “yes” or “no” and explain why or why not.
34. A 1-to-1 function $y = f(x)$ is such that $f\left(\frac{1}{2}\right) = -4$. Determine the value of $f^{-1}(-4)$.
35. Solve the equation $\ln y = t + 1$ for y .
36. Solve the equation $6^t = 50$ for t .
37. Solve the equation $\log_m 64 = 6$ for m .
38. Solve the equation $\log k = -2$ for k .
39. Solve the equation $\log_2 t + \log_2(t + 14) = 5$ for t .
40. Solve the inequality $\ln x > 0$ for x .
41. True or False: $\log_n x - \log_n y = \frac{\log_n x}{\log_n y} = \log_n\left(\frac{x}{y}\right)$
42. True or False: $\log_a x = \frac{\ln x}{\ln a}$

43. Evaluate or simplify the expression $a^{\log_a 7}$
44. Evaluate or simplify the expression $\ln e^4$.
45. True or False: $g(x) = \sin x$ is an even function.
46. True or False: $k(x) = \cos x$ is an odd function.
47. Find all the trigonometric values of θ if $\sin \theta = \frac{-3}{5}$ and $\tan \theta < 0$
48. Determine the amplitude, period, phase shift, vertical shift and range of $f(x) = -3\sin(2x + \pi) + 1$
49. Determine the value of each trigonometric expression:

a. $\sin \frac{\pi}{4}$

b. $\cos \frac{\pi}{3}$

c. $\tan \frac{\pi}{2}$

d. $\cos 0$

e. $\csc \frac{2\pi}{3}$

f. $\sec \frac{5\pi}{6}$

g. $\cot \frac{7\pi}{6}$

h. $\sin \frac{3\pi}{2}$

i. $\cos \pi$

j. $\sec \frac{5\pi}{4}$

k. $\cot \frac{5\pi}{3}$

50. Determine the value of each inverse trigonometric expression:

a. $\sin^{-1}\left(\frac{1}{2}\right)$

b. $\cos^{-1}(1)$

c. $\tan^{-1}(1)$

d. $\csc^{-1}(2)$

e. $\sec^{-1}\left(\frac{2}{\sqrt{3}}\right)$

f. $\cot^{-1}(-1)$

g. $\sin^{-1}\left(\frac{-\sqrt{3}}{2}\right)$

h. $\cos^{-1}\left(\frac{-1}{2}\right)$

i. $\tan^{-1}(\sqrt{3})$

j. $\sin^{-1}(0)$

k. $\cos^{-1}(0)$

l. $\cot^{-1}(0)$